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(54) Title: ANALYSIS OF GEOMETRIC SURFACES BY CONFORMAL STRUCTURE

(57) Abstract: A method for analyzing, classifying, and recognizing geometric surfaces is disclosed. Geometric surfaces are treated as Riemann manifolds and the conformal structure corresponding to the surfaces is calculated. The conformal structure of the surface contains the intrinsic geometric information about the surface, but in a much more compact format as compared to other representations. Conformally mapping the surface to a canonical parameter domain, such as a disk, sphere, or plane retains the geometric information of the surface, and renders the calculation of conformal structure much easier. Various applications enabled by such a conformal representation include surface matching, surface cataloging, surface recognition, animation and morphing between surfaces, and other mathematical analysis.